BACKGROUND OF THE INVENTION

1.   Field of the Invention

5   The present invention generally relates to the field of insurance claims. More particularly, the present invention relates to a system and method for displaying messages while processing insurance claims using a messages table.

2.   Description of the Related Art

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Insurance companies have been processing and settling claims associated with bodily injury for a long time. The task of evaluating, analyzing or estimating the amount of damage associated with one or more types of bodily injuries, especially trauma-induced bodily injuries, can be very complex. Complexity in the evaluation process often
15   arises out of the fact that concurrent expertise in legal, medical and insurance fields is often required to arrive at a particular decision involving a bodily injury claim.

The processing of insurance claims, especially bodily injury related insurance claims, is typically performed by one or more computers included in a computer system.
20   The user typically interacts with the insurance claim processing computer system using a computer coupled to a display terminal and a keyboard. An application software program, which typically executes on a computer linked to the insurance claim processing computer system, provides the functionality to perform the processing of insurance claims. The process of determining an estimated amount of the claim associated with a
25   bodily injury is typically interactive. The user may provide inputs to the insurance claim processing computer system by specifying the type or extent of bodily injury, describing the nature of treatments, etc.

The insurance claim processing computer system may use various messages
30   displayed on the display terminal for prompting or communicating with the user to

provide meaningful and relevant input information. Messages may also be used to advise user of a status or condition of application program, list of missing inputs, warning or error messages, etc. In some cases, messages may be output to a printer rather than being displayed on a display screen.

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During the past several years, many insurance companies have been using an earlier computer-based claim-processing system to process, evaluate, analyze or estimate thousands of claims. The computer-based claim-processing system may also be an expert system which utilizes and builds a knowledge base to assist the user in decision making. It may allow the insurance companies to define new rules and/or use previously defined rules, in real-time. The business rules may be generally written by industry experts to evaluate legal, medical, insurance conditions before arriving at a valuation of a claim. The computer based claim-processing system also used messages displayed on a screen to interact with the system user.

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There were several drawbacks with the earlier computer-based system. For example, the messages that were generated while processing the insurance claim, used in the prior art, lacked flexibility and was inefficient. The prior art used hard-coded messages. That is, the actual messages, including the message text, were part of the application program source code. Messages were generated specific to the context of the application program. Thus, many messages which may have had the same text or message content had to be programmed and stored separately and could not be re-used. This increased memory requirements and decreased system performance. In addition, it was difficult to modify and install the application software for use in other countries, which used a language other than, for example, US English. Maintenance of the messages hard-coded in the application program software was also time consuming and costly. This reduced the user's flexibility and usability.

It is, therefore, desirable to develop a new system and method for displaying messages while processing insurance claims using a messages table. It is desirable for the display of messages, including the message text, to be easily customizable for installation in a specific language and/or country. It is also desirable for the messages to be re-used throughout the claims processing application software. Furthermore, it is desirable to be able to store the messages in a repository, external to the application program. Thus, the messages display system and method should be of a flexible design to allow the user to freely select message text based on user requirements.

SUMMARY OF THE INVENTION

The present invention provides various embodiments of an improved method and
system to display messages, while processing insurance claims, using a messages table.
The messages associated with the processing of insurance claims are primarily used to
obtain inputs from the user of the claims processing computer system. Messages, which
are typically displayed on a display screen, may include questions, answers, errors,
warnings, and other text used with interactive claims processing.

As a part of the initial configuration or setup process, the user defines the entries
in the messages table and stores them in a database. The messages are stored as message
codes along with a corresponding message text in a messages table. The database, which
includes the messages table is the repository and the lookup system for the message codes
and the corresponding message texts. Each message code has a corresponding
customizable message text, which may be specified at installation time.

The application program may request a display of a specific message by providing
its message code. In one embodiment, the GetMessageText method of the Message
object, may be invoked, along with providing the values for MsgSectionIn and
MsgCodeIn arguments associated with the GetMessageText method. The
GetMessageText method, on execution, accesses the messages table and obtains the
corresponding message text which is then passed on to the requesting application
program. The application program, thus, remains unaffected to changes in corresponding
customizable message texts.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1a is a block diagram illustrating the architecture of one embodiment of an insurance claims processing system;

5   Figure 1b illustrates one embodiment of a networked insurance claim processing system;

Figure 2 is a flowchart illustrating a method of generating messages associated with processing an insurance claim according to one embodiment;

Figure 3 is a flowchart illustrating a method of using a messages table associated

10   with processing an insurance claim according to one embodiment;

Figure 4 is an exemplary diagram of a messages table in a database according to one embodiment.

While the invention is susceptible to various modifications and alternative forms,

15   specific embodiments thereof are shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that the drawings and detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the present invention as defined by the

20   appended claims.

DETAILED DESCRIPTION OF SEVERAL EMBODIMENTS

Figure 1a: A block diagram illustrating the architecture of one embodiment of an insurance claims processing system

In Figure 1a, an embodiment of an insurance claims processing system 10 may include a computer system 20. The term "computer system" as used herein generally includes the hardware and software components that in combination allow the execution of computer programs. The computer programs may be implemented in software, hardware, or a combination of software and hardware. A computer system's hardware generally includes a processor, memory media, and Input/Output (I/O) devices. As used herein, the term "processor" generally describes the logic circuitry that responds to and processes the basic instructions that operate a computer system. The term "memory" is used synonymously with "memory medium" herein. The term "memory medium" is intended to include an installation medium, e.g., a CD-ROM, or floppy disks, a volatile computer system memory such as DRAM, SRAM, EDO RAM, Rambus RAM, etc., or a non-volatile memory such as optical storage or a magnetic medium, e.g., a hard drive. The memory medium may comprise other types of memory as well, or combinations thereof. In addition, the memory medium may be located in a first computer in which the programs are executed, or may be located in a second different computer which connects to the first computer over a network. In the latter instance, the second computer provides the program instructions to the first computer for execution. Also, the computer system may take various forms, including a personal computer system, mainframe computer system, workstation, network appliance, Internet appliance, personal digital assistant (PDA), television system or other device. In general, the term "computer system" can be broadly defined to encompass any device having a processor, which executes instructions from a memory medium.

The memory medium preferably stores a software program or programs for processing insurance claims as described herein. The software program(s) may be

implemented in any of various ways, including procedure-based techniques, component-based techniques, and/or object-oriented techniques, among others. For example, the software programs may be implemented using a rule-based development tool such as PLATINUM Aion™ available from Computer Associates International, Inc. In one

5   embodiment, PLATINUM Aion™ may combine business rule and object-oriented technologies to create and maintain complex, knowledge-intensive applications. Software developed with PLATINUM Aion™ may employ an Aion™ programming language for automation of processes which may use hundreds or thousands of business rules from a knowledge base. An Aion™ inference engine may automatically determine

10   which rules to execute, when, and in what order. In various other embodiments, the software program may be implemented using other technologies, languages, or methodologies, as desired. A CPU, such as the host CPU, executing code and data from the memory medium includes a means for creating and executing the software program or programs according to the methods, flowcharts, and/or block diagrams described

15   below.

A computer system's software generally includes at least one operating system, a specialized software program that manages and provides services to other software programs on the computer system. Software may also include one or more programs to

20   perform various tasks on the computer system and various forms of data to be used by the operating system or other programs on the computer system. The data may include but are not limited to databases, text files, and graphics files. A computer system's software generally is stored in non-volatile memory or on an installation medium. A program may be copied into a volatile memory when running on the computer system. Data may be read

25   into volatile memory as the data is required by a program.

A server may be defined as a computer program that, when executed, provides services to other computer programs executing in the same or other computer systems. The computer system on which a server program is executing may also be referred to as a

server, though it may contain a number of server and client programs. In the client/server model, a server is a program that awaits and fulfills requests from client programs in the same or other computer systems.

5   The insurance claims processing system 10 may further include a display screen 50 connected to the computer system 20 and an insurance database 40 residing on an internal or external storage. The database may also be referred to as a repository. As used herein, a "database" may include a collection of information from which a computer program may select a desired piece of data. As used herein, an "insurance database" is
10   used as a synonym for a "database" when included in or coupled to an insurance claims processing system 10. System 20 includes memory 30 configured to store computer programs for execution on system 20, and a central processing unit (not shown) configured to execute instructions of computer programs residing on system 20. Claims processing program 60, also referred to as application program software 60, may be
15   stored in memory 30. As used herein, an "insurance claims processing program" 60 may include a software program which is configured to conduct transactions regarding insurance claims, such as by estimating the value of the insurance claims, for example.

The insurance claims processing system 10 may be used by an Insurance
20   Company for processing insurance claims. The insurance claims processing system 10 may incorporate various embodiments of a system and method for displaying messages using a messages table. As used herein, an Insurance Company (IC) includes a business organization that provides insurance products and/or services to customers. More particularly, the insurance products may pertain to providing insurance coverage for
25   accidents and the trauma-induced bodily injuries that may result due to the accident. Examples of trauma-induced bodily injuries may include, but are not limited to: loss of limb(s); bone fractures; head, neck and/or spinal injury, etc.

In one embodiment, on receiving a trauma-induced bodily injury, a customer may file an insurance claim with his/her insurance organization to cover medical and other accident-related expenses. An IC may utilize a computer-based insurance claim processing system to process insurance claims. In one embodiment, the processing may

5 include estimating a value associated with the filed insurance claim.

As used herein, an IC business transaction may be defined as a service of an IC. Examples of business transactions include, but are not limited to: insurance transactions such as filing of claims, payment of claims, application for insurance coverage, and

10 customized benefits, etc. Business transactions may also include services related to customers, insurance providers, employers, insurance agents, investigators, etc.

As used herein, an IC insurance claim processing includes a series of instructions executed by a computer system for processing an IC's business transactions. A claim

15 processing system may include one or more processing tasks. A processing task may include a sequence of one or more processing steps or an ordered list or a structured list of one or more processing steps, associated with the business transaction to be processed by the claim processing system. In one embodiment, the sequence of steps may be fixed. In another embodiment the sequence of steps may be established dynamically, in real-

20 time. In one embodiment, the sequence of one or more steps may include an initial step, a final step, one or more intermediary steps, etc. In one embodiment, an IC user may select steps to process an insurance claim in a sequential manner. In another embodiment, the IC user may select steps to process an insurance claim in a random or arbitrary manner. Examples of processing steps may include, but are not limited to: receiving an input

25 from a user of the IC insurance claim processing system, reading a value from a database, updating a field in a database, displaying the results of a business transaction on a computer screen, etc.

In one embodiment, each processing step may have one or more associated messages. The primary purpose of these messages may be to display additional information related to the current step, solicit a user input, advise user of the current status of the processing step, etc. For example, messages displayed may advise the user to

5   provide an input response to a specific question. In another instance, a message may warn the user of an out-of-range input value.

In one embodiment, the insurance claim processing system utilizes object-oriented technology to process transactions and store information related to insurance

10   claims, including messages. In another embodiment, processing of transactions and storage of information related to insurance claims may utilize traditional programming languages and databases to achieve the same result. This would include processing and storage of messages.

15   The insurance claim processing system may utilize insurance objects, which may be defined to represent or model real-world business features of insurance products and services. This includes a message object to represent messages related to claim processing. Examples of insurance objects may include, but are not limited to, objects representing the following: an insurance claim; an accident report; a settlement; an estimated claim; IC

20   service facilities, customers, and employees; business process such as a new insurance application and calculation of a premium; interfaces to external insurance organizations; work tasks such as calculations, decisions, and assignments; temporal objects such as calendars, schedulers, and timers; and elemental data necessary to accomplish work tasks such as messages, medical costs, risk factors, etc.

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An insurance object, such as a message object, may be represented on the computer screen by a graphical icon or by a display listing the properties of the insurance object in graphic and alphanumeric format. An insurance claim object may be configured to gather and evaluate data for processing a filed insurance claim and to automatically make decisions

about the insurance claim. The one or more processing steps associated with the processing of an insurance claim may also be configured as one or more processing step objects. In one embodiment, a display screen may be associated with a processing step. The display screen may also be represented as an object. Each display screen object may include a property to

5   point to a previous display and another property to point to a next display screen. Each property, e.g. the next display pointer on a display screen object, may be changed dynamically by using methods associated with the display screen object. One display screen object may serve as the starting point for processing insurance claims. In one embodiment, the starting point for processing insurance claims may include acquiring an insurance claim

10   identification number from an IC system user.

In one embodiment, the messages associated with a display screen may be represented as a message object. A message object may also have methods and properties associated with it. In one embodiment, during the processing of an insurance claim, a

15   business rule may determine that the insurance claim processing needs the input of a user to continue the processing of the claim. The insurance claim processing software may invoke a method of a message object to display a message to the IC system user.

In one embodiment, upon startup, the program 60 may provide a graphical user

20   interface to display claims processing related information, including messages, on display screen 50. It may collect user inputs, entered by using user input devices 52 in response to one or more messages displayed on display screen 50, and associated with insurance claims. It may process the user inputs, access an insurance database 40, use the contents of the insurance database 40 to estimate the insurance claim, and store it in memory 30

25   and/or insurance database 40. The program 60 may display a value of the estimated insurance claim on display screen 50. A user may view the display of the estimated insurance claim on display screen 50, and may interactively make modifications, additions, and deletions to the estimated insurance claim.

System 20 may also include one or more user input devices 52, such as a keyboard, for entering data and commands into the insurance claim program 60. It may also include one or more cursor control devices 54 such as a mouse for using a cursor to modify an insurance claim viewed on display screen 50. In response to the displaying of

5   messages related to the insurance claim, the insurance claim program 60 processing steps may be modified, updated and stored in the insurance database 40.

Figure 1b: One embodiment of a networked insurance claim processing system

10   Figure 1b illustrates one embodiment of a networked system, configured for processing insurance claims. In this embodiment, the system is shown as a client/server system with the server systems and client systems connected by a network 62. Network 62 may be a local area network or wide area network, and may include communications links including, but not limited to: Ethernet, token ring, internet, satellite, and modem.

15   Insurance claims processing system 10 as illustrated in Figure 1a may be connected to network 62. The insurance claim processing system software and insurance database 40 may be distributed among the one or more servers 70 to provide a distributed processing system for insurance claim transactions. In other words, an insurance claim processing transaction being processed by the insurance claim processing system may be routed to

20   any server based upon the workload distribution among servers 70 at the time of the transaction. Insurance claim processing system servers 70 may be located on a local area network or may be geographically dispersed in a wide area network.

One or more client systems 80 may also be connected to network 62. Client

25   systems 80 may reside at one or more claim processing units within the insurance company. In a wide area network, client systems 80 may be geographically dispersed. Client systems 80 may be used to access insurance claim processing system servers 70 and insurance database 40. An insurance claim-processing employee may use a client system 80 to access the insurance claim processing system and execute insurance

transactions. An employee may also use a client system 80 to interact with the insurance claim processing system. The interaction may include reading information from displays, messages, etc. displayed on a display screen and/or providing inputs to the insurance claim processing system. One or more printers 90 may also be connected to network 62

5   for printing documents, including reports, display screens, messages, etc. associated with insurance claim transactions.

Various embodiments further include receiving or storing instructions and/or data implemented in accordance with the description herein upon a carrier medium. Suitable

10 carrier media include memory media or storage media such as magnetic or optical media, e.g., disk or CD-ROM, as well as transmission media or signals such as electrical, electromagnetic, or digital signals, conveyed via a communication medium such as networks and/or a wireless link.

15 <u>Figure 2: Generating a message for an insurance claim processing system</u>

Figure 2 is a flowchart illustrating the generation of a message for processing an insurance claim by an insurance claim processing system, according to one embodiment. In step 100, the user of insurance claims processing system 10 may use a client system 80

20 to initially configure, set up, install and store the software associated with the insurance claims processing system, including all the messages.

In one embodiment, a message may be defined by a message code and a corresponding message text and both the message code as well as the message text stored

25 in a message table. In another embodiment, as shown in Figure 3, the message code may further include a message section 300 and a message code identifier 310. The combination of a specific message section and a specific message code identifier uniquely specifies or selects the message text 320 from the message table.

The initial configuration may include specifying or selecting a country and/or a language for the installation. In one embodiment, the selection of a language and/or a country may automatically select a corresponding message text stored in a database. In another embodiment, the user may modify the message text during the installation process.

In step 110, the application program software executing in the insurance claims processing system 10 may initiate a request to display a message. This may be in response to the execution of code in another portion of the application program software, or in response to a previous user input and/or in response to the execution of a business rule.

In step 120, the request to retrieve message text is processed further. In one embodiment, the request may be further processed by another portion of the application program software by invoking the GetMessageText method of the Message object, and including values for MsgSectionIn and MsgCodeIn arguments associated with the GetMessageText method. In another embodiment, the processing of the request may include executing software of a subroutine function to retrieve a corresponding message text for a given message code passed along by the requesting program as an input. The message text may be retrieved from a database, in one embodiment or from an object repository in another embodiment.

In step 130, the message text corresponding to a specified message code is received from step 120. In step 140, the requested message text is sent to the requesting program for display.

Figure 3: Using a messages table for an insurance claim processing system

Figure 3 is a flowchart illustrating a method of using a messages table associated with processing an insurance claim according to one embodiment. In step 200, an insurance claims processing program may generate a request to display a message, wherein the request may include a requested message code. Each message code may include a sequence of alphanumeric values, wherein each sequence is unique relative to the other sequences. In one embodiment, each message code may include a message section and a message code identifier, as further illustrated in Figure 4.

In step 210, a messages table in a database may be searched for a matching entry which matches the requested message code. The table may store a plurality of entries including the matching entry, wherein each entry in the table may include a message code and a corresponding message text. The database may be implemented, for example, as a relational database or an object-oriented database.

In step 220, the matching entry may be retrieved from the table in response to said searching the table for the matching entry which matches the requested message code, wherein the matching entry comprises a matching message text.

In step 230, the matching message text corresponding to the requested message code may be displayed by the insurance claims processing program on a display device coupled to a computer system. The message text may be configured to assist a user in processing an insurance claim using the insurance claims processing program.

In various embodiments, the message text of each entry in the table may be specified during an installation of the insurance claims processing program on a computer system and/or during an installation of the table on a computer system. The message text of each entry in the table in the database may be updated by re-installing the table on the computer system without re-installing the insurance claims processing program on the computer system. The message text of one or more entries in the table may be

customized for a particular insurance organization during an installation of the insurance claims processing program on a computer system. Additionally, the message text of one or more entries in the table may be localized for use in a particular geographical location.

In one embodiment, the insurance claim may include a bodily injury claim, and processing the insurance claim may include processing the bodily injury claim to estimate a bodily injury general damages value. The requested message text may include information relevant to an estimate of a value of the insurance claim. The requested message code may include an injury code which identifies a specific bodily injury, and the requested message text may include a name of the specific bodily injury. The requested message code may include a treatment code which identifies a specific injury treatment, and the requested message text may include a name of the specific injury treatment.

Figure 4: An example of a messages table

Figure 4 is an exemplary diagram of a messages table in a database according to one embodiment. In one embodiment, the messages table may include columns such as message section 300, message code identifier 310, and message text 320. In one embodiment, the messages table may be implemented in any number of ways, such as a relational database, in a variety of commercially available database management systems. The messages table may have as many rows as may be supported by the database management system in which it is implemented. The messages table may be accessed (e.g., searched, written to, read from, etc.) through a programming interface or standard access mechanism (e.g., SQL) which is supported by the database management system in which the messages table is implemented.

Although the system and method of the present invention have been described in connection with several embodiments, the invention is not intended to be limited to the specific forms set forth herein, but on the contrary, it is intended to cover such

alternatives, modifications, and equivalents as can be reasonably included within the spirit and scope of the invention as defined by the appended claims.